

## GENERALIZED SECTION OF THE CHOCTAWHATCHEE FORMATION

	Feet
5. <i>Cancellaria</i> zone. Fine to coarse clayey fossiliferous sand.....	25-30
4. "Aluminous clay." Grayish unfossiliferous clay.....	25
3. <i>Ecphora</i> zone. Sandy fossiliferous clay.....	15-25
2. <i>Arca</i> zone. Gray sandy fossiliferous marl.....	55
1. <i>Yoldia</i> zone. Dark-gray to bluish micaceous and carbonaceous clayey fossiliferous sand.....	15

The *Yoldia* zone, which is here recognized for the first time, and the *Arca* zone are now regarded as representing the upper part of the middle Miocene; the *Ecphora* zone, the "aluminous clay," and the *Cancellaria* zone are referred to the upper Miocene.

*Yoldia* zone.—A new name, *Yoldia* zone, is here proposed for a bed carrying many individuals of the genus *Yoldia*. The type locality is the Frazier farm (formerly the Spencer farm), Walton County, in SE.  $\frac{1}{4}$  sec. 18, T. 2 N., R. 19 W. (station 12060). The sediments composing the zone consist of dark-gray to bluish micaceous clayey sand with inclusions of carbonaceous particles. The thickness has not been accurately determined, but it probably does not exceed 15 feet.

The zone is believed to represent the basal bed of the Choctawhatchee formation although the contact with the underlying Shoal River formation which may be conformable with it has not been recognized with certainty. The zone is separated from the overlying *Arca* zone because of its abundant content of large *Yoldia* shells, a genus which usually indicates that the temperature of the water in which it lived was rather cold.

*Arca* zone.—The name *Arca* zone was proposed by Mansfield<sup>3</sup> in 1929. The zone is typically exposed at Red Bay, Walton County, where it forms the lowermost fossiliferous bed, about 21 feet thick, in the exposure (stations 4975, 7152). A nearly unfossiliferous upper bed of clay at this locality, which was formerly included in the *Arca* zone, is now placed in the *Ecphora* zone.

The *Arca* zone consists mainly of very fossiliferous gray sandy marl having an estimated total thickness of about 55 feet. It probably rests conformably upon the *Yoldia* zone. The upper limit of the *Arca* zone is provisionally placed at the contact of the marl with an overlying plastic clay bed which, in the section at Red Bay, carries no determinable fossils. The shells in the marl are worn and broken.

<sup>3</sup> W. C. MANSFIELD in C. W. COOKE and STUART MOSSOM, *Geology of Florida*, Florida Geol. Survey Ann. Rept. 20: 140. 1929; and W. C. MANSFIELD, *Miocene gastropods and scaphopods of the Choctawhatchee formation of Florida*, Florida Geol. Survey Bull. 3: 15. 1930.

The absence of fossils from the clay and the lithologic difference between the marl and the clay suggest an unconformity between the two beds, but this relationship has not been fully established.

The *Arca* zone was observed in the Alaqua Creek Valley at the head of small branches flowing into Seoniers Mill Creek, on the Bell farm, in the NE.  $\frac{1}{4}$  sec. 29, T. 2 N., R. 19 W. (stations 12044-45); on Vaughan Creek, in secs. 27 and 28, T. 2 N., R. 19 W. (stations 12046-47); and at Alice Creek, in the SE.  $\frac{1}{4}$  sec. 8, T. 1 N., R. 19 W. (station 12527).

The beds exposed at the Bell farm and along Vaughan Creek are believed to carry the earliest fauna of the *Arca* zone, whereas the lower fossiliferous bed at Red Bay carries the latest fauna of this zone. The senior author, basing his evidence upon the study of the mollusks, believes the beds at the Bell farm and along Vaughan Creek have nearly if not the same stratigraphic position, but the junior author, basing his evidence upon the study of the foraminifera, is inclined to believe that the beds along Vaughan Creek are lower in the section than those at the Bell farm.

*Ecphora* zone.—The *Ecphora* "bed," named by Dall and Harris,<sup>4</sup> is now known as the *Ecphora* zone.<sup>5</sup> Its type locality is at Alum Bluff, Apalachicola River, Liberty County, Fla., where it forms the uppermost fossiliferous bed of the section. The sediments composing the zone consist of a sandy clay which is bluish where unweathered. The bed ranges in thickness from 15 to 25 feet at Alum Bluff.

At Alum Bluff the *Ecphora* zone, with somewhat doubtful unconformable relations, rests upon a fossil leaf-bearing sand which Cooke and Mossom<sup>6</sup> questionably refer to the Alum Bluff group. It is conformably overlain by the "aluminous clay" of Dall.

An exposure in the east bank of Alaqua Creek on Permenter's old place, in sec. 17, T. 1 N., R. 19 W. (station 12048) apparently represents the *Ecphora* zone. At Red Bay the upper poorly fossiliferous plastic clay bed, about 27 feet thick, is placed in this zone.

The "aluminous clay."—The "aluminous clay," a name applied by Dall<sup>7</sup> to a 25-foot bed of grayish clay overlying the *Ecphora* zone at Alum Bluff, Liberty County, Fla., has not been recognized in the Alaqua Creek Valley.

<sup>4</sup> W. H. DALL and G. D. HARRIS, *The Neocene of North America*, U. S. Geol. Survey Bull. 84: 123-124. 1892.

<sup>5</sup> W. C. MANSFIELD in *Geology of Florida*, p. 140, 1929.

<sup>6</sup> C. W. COOKE and STUART MOSSOM, *Geology of Florida*, Florida Geol. Survey Ann. Rept. 20: 108. 1929.

<sup>7</sup> W. H. DALL and JOSEPH STANLEY-BROWN, *Cenozoic geology along the Apalachicola River*, Geol. Soc. Am. Bull. 5: 168-169. 1894.

*Cancellaria zone*.—The name *Cancellaria zone* was proposed by Mansfield<sup>8</sup> to include beds that carry the latest Miocene fauna. This zone is typically exposed in the highest fossiliferous beds along Harveys Creek, in the SW.  $\frac{1}{4}$  sec. 9, T. 1 S., R. 3 W., Leon County, Fla. The *Cancellaria zone* is composed of fine to coarse grained clayey sand replete with fossils, having an estimated total thickness of 25 to 30 feet. It has not been recognized in the Alaquá Creek Valley.

BOTANY.—*New species of slime molds*.<sup>1</sup> G. W. MARTIN, State University of Iowa. (Communicated by WILLIAM R. MAXON.)

In the present paper six species of Myxomycetes are described as new,—one from Colombia, one from Ontario, and four from the western United States. The descriptions of the two species of *Cribraria* are based in part upon the monographic study of the genus made by Miss Eunice Lovejoy and filed, as a thesis, in the library of the State University of Iowa. The type specimen of the Colombian species and portions of the type specimens of the others are deposited in the United States National Herbarium.

***Badhamia cinerascens* Martin, sp. nov.**

Peridia sessilia, globosa vel leniter depressa, 0.7–1.5 mm. lata, agglomerata; tunica tenuis, fragilis, cinerea, rete calcifero obducta; capillitium album; sporae liberae, fuscae, valide echinulatae, 12–15  $\mu$  diam.

Sporangia globose or flattened, sessile or occasionally borne on a pallid, membranous stipe, 0.7–1.5 mm. in diameter, densely aggregated and more or less superimposed, on a pallid membranous hypothallus; peridium thin, fragile, ashy, covered by a dense network of calcareous thickenings; capillitium abundant, white, badhamioid under lens, but under the microscope exhibiting numerous threadlike tubules; spores intensely black in mass, spherical, non-adherent, deep blackish brown by transmitted light, densely and strongly spinulose, 12–15  $\mu$ , averaging 13.5  $\mu$ , 2  $\mu$  representing the spiny margin.

COLOMBIA: On tree trunk, La Sierra, Antioquia, alt. 2,000 m., March 8, 1931, W. A. Archer 1662 (type, U. S. Nat. Herb.).

Close to *B. macrocarpa* and, like that and related species, with a more or less physaroid capillitium, but distinguished by its ashy color, the heaped sporangia, and the extremely dark, coarsely and densely spiny spores. In appearance not unlike some specimens of *Physarum cinereum*, but the capillitium distinctly more badhamioid than physaroid, and the spores much larger, darker, and rougher.

<sup>8</sup> W. C. MANSFIELD in *Geology of Florida*, p. 140. 1929.

<sup>1</sup> Received December 30, 1931.

***Amaurochaete ferruginea* Macbr. & Martin, sp. nov.**

*Aethalium pulvinatum*, longitudine 7 cm.; peridium fugaceum; capillitium ferrugineum; sporae ferrugineae, minute verrucosae, 7.5–9  $\mu$  diam.

*Aethalium pulvinate*, flat, up to 7 cm. in length and 4 cm. in width; peridium fugaceum; hypothallus shining, silvery, extending somewhat beyond the margin of the aethalium; definite columellae lacking, but capillitium branching from numerous rigid irregular branches arising from the hypothallus and soon dissipated into subordinate branches; threads dark brown, bearing numerous lighter brown irregular membranous expansions; spores cinnamon-drab to benzo-brown (Ridgway) in mass, pale reddish brown by transmitted light, minutely warted, 7.5–9  $\mu$ .

CALIFORNIA: On charred coniferous wood, Yosemite Park, Aug. 31, 1905, *T. H. Macbride* (type, in herb. State Univ. Ia., no. 1438). OREGON: On decorticated coniferous wood, S. U. I. 1439.

The structure of the capillitium is very similar to that of *A. fuliginosa*, from which species this differs in the brownish color of the capillitium and in the small, pale, relatively smooth, ferruginous spores, the two characters together giving the fructification a ferruginous cast in marked contrast to the black of the other species of the genus.

***Amaurochaete trechispora* Macbr. & Martin, sp. nov.**

*Aethalium pulvinatum*, longitudine 7 cm.; peridium obscureum, nitens, fugaceum, tuberculatum; capillitium nigrum; sporae atroviolaceae, reticulatae, 13–15  $\mu$  diam.

*Aethalium pulvinate*, flat, up to 7 cm. in length; cortex dark, shining, evanescent, faintly tuberculate as though suggesting the tips of component sporangia; hypothallus broadly expanded, persistent, extending well beyond the borders of the aethalium, silvery, with yellowish stains, and amber globules representing remnants of the presumably yellow plasmodium; capillitium black, irregular, composed of numerous stout columella-like bases, these soon becoming dissipated into numerous freely anastomosing branches; peripheral nets lacking; spores purplish black in mass, lilaceous brown by transmitted light, globose, ornamented with a pronounced reticulation formed of wing-like ridges, the meshes coarse and often unequal, 13–15  $\mu$  in diameter, 10–12  $\mu$  representing the diameter of the body of the spore, the balance the ridges of the reticulum.

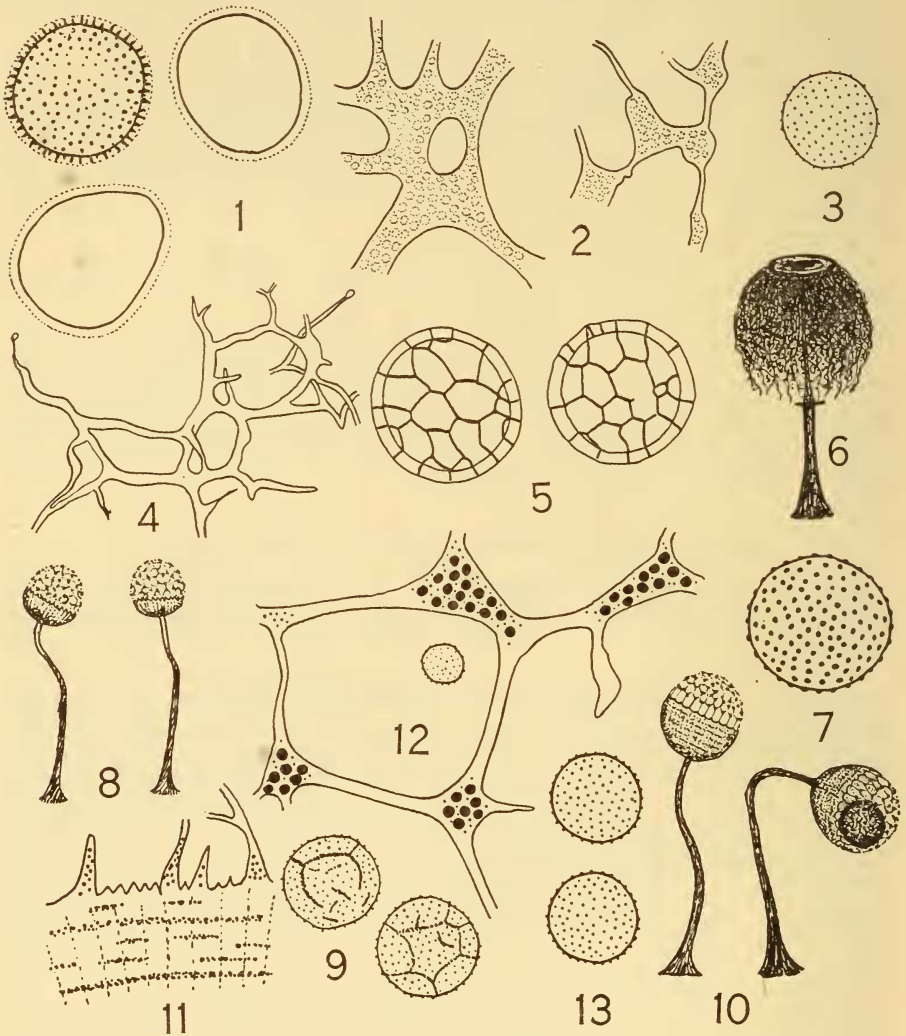
ONTARIO: On *Sphagnum*, Temagami Forest Reserve, Oct. 6, 1919, *J. H. Faull* (type, in herb. Univ. Toronto, no. 5135); on herbaceous stem, Aug. 14, 1931, *H. S. Jackson* (herb. Univ. Toronto 2460).

A well-marked species, related to *A. fuliginosa* but separated by its remarkable and striking spores. Based on a collection well described by Miss Currie<sup>2</sup> and by her doubtfully referred to *Stemonitis fusca* Roth var. *trechispora* Torrend. Aside from the reference to the strongly reticulated spores and the occurrence on *Sphagnum*, there is nothing in Torrend's brief description of his variety<sup>3</sup> to suggest the present species, nor can it be the form

<sup>2</sup> Trans. Royal Can. Inst. 1919: 296.

<sup>3</sup> Fl. Myx. 141. 1909.

described and illustrated by Jahn<sup>4</sup> as *Stemonitis trechispora* Torr. It is clearly an *Amaurochaete*.



Figs. 1-2, *Badhamia cinerascens*, sp. nov. 1, Three spores, two in outline to show common variations in shape,  $\times 1500$ . 2, Portions of capillitium, badhamioid at left, somewhat physaroid at right,  $\times 164$ . Fig. 3, *Amaurochaete ferruginea*, sp. nov., spore,  $\times 1500$ . Figs. 4-5, *Amaurochaete trechispora*, sp. nov. 4, Portion of capillitium,  $\times 164$ . 5, Two spores,  $\times 1500$ . Figs. 6-7, *Enerthenema melanospermum*, sp. nov. 6, Fructification,  $\times 20$ . 7, Spore,  $\times 1500$ . Figs. 8-9, *Cribraria dictyospora*, sp. nov. 8, Two sporangia,  $\times 20$ . 9, Two spores,  $\times 1500$ . Figs. 10-13, *Cribraria atrofusca*, sp. nov. 10, Two sporangia,  $\times 20$ . 11, Margin of calyculus, showing concentric lines of granules,  $\times 164$ . 12, Portion of net and spore,  $\times 682$ . 13, Two spores,  $\times 1500$ .

<sup>4</sup> Ber. Deutsch. Bot. Ges. 41: 394. 1923.